IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant : Masatoshi CHIBA

Group Art Unit: 1649

Serial No : 09/926,661

Examiner: Daniel E. KOLKER

Filed : February 28, 2002

For : LYOPHILIZED HGF PREPARATIONS

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Further to the Notice of Panel Decision from Pre-Appeal Brief Review mailed August 18, 2006, this Appeal Brief is responsive to the final Office Action mailed February 16, 2006 and to the Advisory Action mailed June 8, 2006. Inasmuch as the Notice sets a one-month shortened statutory period for response, this Appeal Brief is filed concurrently with a Request for One-Month Extension of Time.

If any additional fees are due for consideration of this Brief, including any extension of time fees, the Office is authorized to charge such fees to Deposit Account No. 19-0089.

I. Real Party In Interest

The assignee, Mitsubishi Chemical Corporation, is the real party in interest.

II. Related Appeals and Interferences

None.

III. Status of Claims

Claims 1, 3, 4, 6-16, and 22-28 are pending in this application.

Claims 2, 5, and 17-21 have been canceled.

Claims 22-28 stand withdrawn from consideration as directed to a non-elected invention, pursuant to the restriction requirement made by the Examiner in the Office Action mailed June 28, 2005, and Appellant's election made in the communication dated July 28, 2005. An election of species requirement further required Appellant to choose a species from arginine, lysine, histidine, glutamine, proline, glutamic acid, aspartic acid, and sulfated polysaccharides. Appellant elected arginine.

Claims 1, 3, 4, and 6-16 stand finally rejected. Appellant appeals the rejection of claims 1, 3, 4, and 6-16.

IV. Status of Amendments

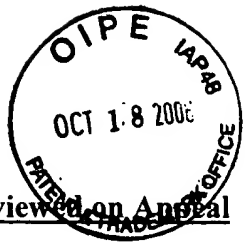
There are no amendments that have not been entered. The claims are in their form as amended in the Amendment under 37 C.F.R. § 1.116, filed May 16, 2006, entry of which was indicated by the Examiner in the Advisory Action mailed June 8, 2006. The Advisory Action withdrew the rejection of claim 11 under 35 U.S.C. § 112, second paragraph, but maintained the rejections under 35 U.S.C. §§ 102 and 103.

V. Summary of Claimed Subject Matter

The following description is made with respect to the independent claims and includes reference to particular parts of the specification. As such, the following is merely exemplary and is not a surrender of other aspects of the present invention that are also enabled by the present specification and that are directed to equivalent structures or methods within the scope of the claims.

Independent claim 1 relates to a lyophilized preparation comprising a hepatocyte growth factor (specification, page 4, lines 9-10), a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof (specification, page 5, lines 12-14), for preventing formation of an aggregate of the hepatocyte growth factor (specification, page 4, line 10), sodium chloride (specification, page 4, lines 10-11), and a buffering agent (specification, page 4, line 11), which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL (specification, page 4, line 12).

Independent claim 3 relates to a lyophilized preparation comprising a hepatocyte growth factor (specification, page 4, lines 9-10), a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof (specification, page 5, lines 12-14), for preventing formation of an aggregate of the hepatocyte growth factor (specification, page 4, line 10), sodium chloride (specification, page 4, lines 10-11), and a buffering agent (specification, page 4, line 11), which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL (specification, page 4, line 12), and is capable of preparing an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL by redissolution (specification, page 4, lines 15-17).



VI. Grounds of Rejection to be Reviewed on Appeal

A) Whether claims 1, 3, 4, 6-9, and 12-15 are anticipated by Nakamura et al. (European Application No. 0456188 A1), hereinafter "Nakamura"

B) Whether claims 1 and 16 are anticipated by, or in the alternative, obvious over, Nakamura

C) Whether claims 1, 3, 4, and 6-16 are obvious over Nakamura in view of Tanaka et al. (WO 97/02832), hereinafter "Tanaka"

VII. Argument

A) Whether claims 1, 3, 4, 6-9, and 12-15 are anticipated by Nakamura (European Application No. 0456188 A1).

1) Rejection of Claims 1 and 3

Initially, Appellant respectfully notes that independent claim 1 is directed to a lyophilized preparation comprising a hepatocyte growth factor, a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof, for preventing formation of an aggregate of the hepatocyte growth factor, sodium chloride, and a buffering agent, which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL.

Appellant's independent claim 3 is directed to a lyophilized preparation comprising a hepatocyte growth factor, a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof, for preventing formation of an aggregate of the hepatocyte growth factor, sodium chloride, and a buffering agent, which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL, and capable of preparing an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL by redissolution.

Appellant also notes that in response to a Restriction Requirement mailed June 28, 2005, Appellant elected arginine as the specie of stabilizing agent, for purposes of examination. The claim has not been amended to remove non-elected species, in expectation of allowable subject matter.

Prior to addressing the art-based rejections, some discussion of the context of the invention is useful. Appellant respectfully notes that aqueous hepatocyte growth factor (HGF) preparations rapidly decrease in solubility of HGF at neutral pH and have the problems of aggregation, cloudiness, and gelation when stored at a low temperature or room temperature for several days. (Specification, page 2, lines 10-12.) Aqueous preparations have low

physicochemical stability, for example, forming degradation products and aggregates, and also have poor stability as a pharmaceutical preparation, for example, exhibiting reduced biological activity. (Specification, page 2, lines 13-15.) Therefore, aqueous preparations are not suitable for a long-term storage from a viewpoint of biological activity. (Specification, page 2, lines 15-16.) For at least these reasons, there is a need in the art for a lyophilized HGF preparation.

Japanese Patent Unexamined Publication No. 9-25241 discloses a lyophilized preparation of HGF (TCF) that is said to be stable over a long period, which is provided by using citrate as a buffering agent, and glycine, alanine, sorbitol, mannitol, or the like, as a stabilizing agent. (Specification, page 2, lines 22-27.) However, due to the citric acid used as a buffering agent in the lyophilized preparation, the pH of a redissolved preparation will be acidic, resulting in a solution with a high osmotic pressure, which causes problems of pain on administration by injection, or an inflammatory reaction and hemolysis at the administration site. (Specification, page 2, lines 28-31.)

Additional difficulties are presented because HGF is a substance having extremely potent physiological activities, and thus, when used as a medicament, it needs to be provided in a very low concentration. (Specification, page 2, line 32 – page 3, line 1.) Studies by the present inventors have revealed that, as for the lyophilized HGF (TCF) preparation comprising glycine or alanine described in Japanese Patent Unexamined Publication No. 9-25241 (mentioned above), little formation of aggregate was observed during storage when the lyophilized preparation was produced from an aqueous solution containing HGF at a high concentration, while aggregate formation was observed during storage when a preparation was produced in the presence of glycine or alanine by lyophilizing an aqueous solution containing HGF at a low concentration. (Specification, page 2, lines 1-10.) Thus, glycine or alanine appears to be useful as a stabilizing agent when HGF is lyophilized at a high concentration, but not when HGF is lyophilized at a low concentration. (Specification, page 2, lines 10-14.)

The present invention is thus directed at producing a lyophilized preparation that hardly forms aggregates and has excellent stability in long-term storage by using an aqueous solution containing HGF at a low concentration. It has been surprisingly discovered by the inventors that

the specific combination of the features of Appellant's claims has the effect to avoid the formation of aggregates.

Turning to the rejection, Appellant notes that Nakamura includes a broad disclosure, which does not teach or suggest Appellant's recited combination of features as a lyophilized preparation, its manner of production or it use. Nakamura broadly discloses that the therapeutic agents of his invention are generally formed into injections containing HGF solely or combined with carriers, etc. known per se. For example, he discloses that injections can be prepared by dissolving HGF in suitable buffers, followed by sterilization by filtration through a filter.

Nakamura further discloses that the therapeutic agents for hepatocirrhosis of his invention may contain other additives such as stabilizers, excipients, dissolution-promoters, adsorption-preventors, and antioxidants, and examples thereof include, for example, sugars such as mannitol and glucose, amino acids such as glycine, alanine, lysine, and arginine, proteins such as albumin, alcohols such as ethylene glycol and glycerol, hydrophilic polymers such as polyethylene glycol, inorganic salts such as NaCl, organic salts such as sodium citrate, surfactants such as Polysorbate 80 and reducing agents containing sulfur, which may be used alone or in combination. However, there is no teaching or suggestion to combine such broad disclosure of Nakamura in the manner recited in Appellant's claims.

For example, the Examples disclosed in Nakamura include Examples 1 – 5 of freeze-dried HGF preparations. However, in Examples 1 and 2, the buffer solution has a pH value of 7.4, while no amino acid is used for stabilization. In Examples 3 and 4, the aqueous solution does not contain a buffering agent. Only Example 5 discloses lyophilization of HGF with a solution comprising an amino acid (glycine). However, the solution of Example 5 is not buffered and does not contain a salt.

Appellant notes that for anticipation to exist, Nakamura must clearly and unequivocally disclose the claimed subject matter without any need for picking, choosing, or combining various disclosures. For anticipation to exist, one must not be required to pick and choose from the disclosure of Nakamura and combine them as Appellant has. Rather, for anticipation to exist, Nakamura must clearly and unequivocally disclose all of the elements of Appellant's claimed

subject matter *with sufficient specificity*. Appellant's claims are not disclosed with sufficient specificity in Nakamura to constitute anticipation of Appellant's claimed subject matter.

Appellant respectfully directs the Board's attention to the Board's decision in *Ex parte* Bobsein et al., (Appeal No. 2005-1332), and to *In re Arkley*, 172 U.S.P.Q. 524 (CCPA 1972), which is cited in *Ex parte* Bobsein, copies of both of which are attached. Those decisions stand for the proposition that, for anticipation to stand, there must not be picking and choosing among possible combinations. Appellant respectfully submits that in the appealed rejections, the Office has improperly picked and chosen from among possible combinations, to arrive at the claimed invention. Appellant submits that the rejection improperly utilizes Appellant's disclosure as a guide to pick and choose from Nakamura's broad disclosure, in an attempt to arrive at Appellant's claimed subject matter.

In the Office Action mailed August 18, 2005, the Examiner states that "Nakamura teaches a lyophilized preparation comprising the following components: 1 mg HGF, 100 ml of phosphate buffer, 0.15 M NaCl (see column 14, lines 25-35)." (Office Action mailed August 18, 2005, page 4, lines 5-7.) The Examiner's reliance on this particular disclosure of Nakamura is noteworthy because the Examiner asserts that it provides: a lyophilized preparation of HGF, sodium chloride, and a buffering agent, which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL. The Examiner admits that this composition, i.e., the composition of Example 1 of Nakamura, does not include arginine. (Advisory Action, page 2, lines 14-15.)

In the final Office Action, the Examiner asserts that Appellant's claimed stabilizer, arginine, is disclosed in Nakamura, referring to column 9, lines 52-58. Thus, the Examiner asserts that Nakamura discloses all of the elements of Appellant's claimed invention.

So that there is no question about what Nakamura actually discloses, the passage at column 14, lines 25-35 is reproduced as follows:

Example 1

> An aqueous solution is prepared aseptically by adding 1 mg of a hepatocyte growth factor and 100 mg of human serum albumin to 100 ml of 0.02 M phosphate buffer (pH 7.4) containing 0.15 M NaCl and 0.01% Polysorbate 80, and filled in a vial at 1 ml per vial, followed by lyophilization and sealing. Injectable distilled water is filled in an ampoule at 1 ml each for dissolution.

(Nakamura, column 14, lines 25-35.) The passage the Examiner relies upon for the disclosure of arginine is set forth in its entirety, as follows:

> The therapeutic agents for hepatocirrhosis of the invention may contain other additives such as stabilizers, excipients, dissolution-promoters, adsorption-preventors and antioxidants, and examples thereof include, for example, sugars such as mannitol and glucose, amino acids such as glycine, alanine, lysine and arginine, proteins such as albumin, alcohols such as ethylene glycol and glycerol, hydrophilic polymers such as polyethylene glycol, inorganic salts such as NaCl, organic salts such as sodium citrate, surfactants such as Polysorbate 80 and reducing agents containing sulfur, which may be used alone or in combination.

(Nakamura, column 9, line 52 – column 10, line 6.)

Appellant respectfully disagrees with the statements that arginine is described in Nakamura as a stabilizing agent. Arginine, along with glycine, alanine, and lysine, are described as "amino acids," but are not characterized by Nakamura as being anything other than "additives." To be precise, Nakamura describes additives as including stabilizers, excipients, dissolution-promoters, adsorption-preventors, and antioxidants. Nakamura further discloses "examples" of additives as including, for example, sugars, amino acids, proteins, alcohols, hydrophilic polymers, inorganic salts, organic salts, surfactants, and reducing agents. However, Nakamura does not state how the examples correlate with the classes of additives that are listed. Thus, while Appellant's specification states that arginine, as well as other amino acids, can be used as stabilizers, that information is not provided by Nakamura, and to suggest that Nakamura discloses arginine – or any other particular amino acid – for use as a stabilizer, is factually incorrect.

Concerning this particular point, the Advisory Action states that "the Examiner notes that Nakamura lists arginine in the same sentence as 'stabilizers.' It appears that Nakamura contemplated that arginine had stabilizing properties." (Advisory Action, continuation sheet,

lines 40-41.) The 87-word "sentence" referred to by the Examiner is set forth above in its entirety. Appellant respectfully submits that the referred-to passage no more suggests that arginine is a stabilizer than it does that arginine is an excipient, a dissolution-promoter, an adsorption-preventor, and an antioxidant.

Appellant notes that Example 1 from Nakamura (column 14, lines 25-35) contains, in addition to the HGF, phosphate buffer, and NaCl, human serum albumin and Polysorbate 80. Example 1 does not contain arginine. The Example does not provide an indication as to the intended functions of the various components, does not include any amino acid, let alone arginine. Nakamura specifically included certain "additives" in Example 1 – human serum albumin and Polysorbate 80 – but it did not included arginine. And there is no teaching or suggestion in Nakamura as to any desirability to add any other ingredient in the Example 1 composition.

For the foregoing reasons, Appellant respectfully submits that claims 1 and 3 are not anticipated, and respectfully requests withdrawal of the rejection for anticipation over Nakamura.

2. Rejection of Claim 4

The rejection of claim 4 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 4 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 4 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

3. Rejection of Claim 6

The rejection of claim 6 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 6 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 6 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

4. Rejection of Claim 7

The rejection of claim 7 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 7 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 7 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 7, which further includes that the buffering agent is a phosphoric acid salt.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

5. Rejection of Claim 8

The rejection of claim 8 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 8 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 8 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 8, which further requires that the aqueous solution before lyophilization have a pH and an osmotic pressure ratio desirable as an injection.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

6. Rejection of Claim 9

The rejection of claim 9 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 9 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 9 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 9, which further requires that the aqueous solution obtained after redissolution have a pH and an osmotic pressure ratio desirable as an injection.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

7. Rejection of Claim 12

The rejection of claim 12 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 12 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 12 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 12, which further requires that the preparation contain a surface active agent.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

8. Rejection of Claim 13

The rejection of claim 13 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 13 is dependent upon and includes the subject matter recited in claim 12. Therefore, the anticipation rejection based upon claim 13 is without appropriate basis for at least the reasons set forth by Appellant with respect to claims 12 and 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 13, which further requires that the surface active agent be a nonionic surface active agent.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

9. Rejection of Claim 14

The rejection of claim 14 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 14 is dependent upon and includes the subject matter recited in claim 13. Therefore, the anticipation rejection based upon claim 14 is without appropriate basis for at least the reasons set forth by Appellant with respect to claims 13, 12, and 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 14, which further requires that the nonionic surface active agent be a polyoxyethylene ether surface active agent.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

10. Rejection of Claim 15

The rejection of claim 15 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 15 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 15 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 15, which further requires that the preparation be prepared in a vial or ampoule.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

11. Rejection of Claim 16

The rejection of claim 16 under 35 U.S.C. § 102(b) as being anticipated by Nakamura is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 16 is dependent upon and includes the subject matter recited in claim 1. Therefore, the anticipation rejection based upon claim 16 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura does not teach the combination of features as recited in claim 16, which further requires the stabilizing agent in an amount sufficient to prevent HGF aggregate formation during at least one of lyophilization and storage after the lyophilization.

Accordingly, the anticipation rejection based upon Nakamura should be withdrawn.

B) Whether claims 1 and 16 are anticipated by, or in the alternative, obvious over, Nakamura.

The Office Action mailed August 18, 2005 sets forth the details of this rejection, noting:

> The reasons why the teachings of Nakamura meet the limitations of claim 1 are presented in the previous paragraphs. Claim 16 is drawn to an amount of the stabilizing agent sufficient to prevent HGF aggregate formation during lyophilization and/or storage after lyophilization. The Examiner cannot determine if the amount used by Nakamura is sufficient to achieve the claimed property, prevention of aggregate formation.

(Office Action mailed August 18, 2005, page 4, line 31 – page 5, line 3.)

Appellant notes that while the Examiner states that claim 1 is anticipated by, or in the alternative, obvious over, Nakamura, the Examiner fails to make any case for the obviousness of this claim. The Examiner fails to address any of the three requirements of a *prima facie* case of obviousness: motivation, expectation of success, and presence of all claimed elements. For this technical deficiency alone, the rejection should be withdrawn.

However, Appellant additionally notes that a *prima facie* case cannot be made from Nakamura for at least the following reasons. As noted above, the specific Examples disclosed by Nakamura do not include arginine. Moreover, there is nothing in Nakamura that would cause one of ordinary skill in the art to add arginine, or to replace another component of Nakamura's Examples with arginine. There is no suggestion of its desirability as an additional additive, and thus, there is no reason one of skill in the art would add it to Nakamura's exemplified compositions. Additionally, there is no suggestion of its interchangeability with some other component already present in one of Nakamura's compositions. For these reasons, there is no reason that a person of skill in the art would select, from all of the choices of "additives" in Nakamura, arginine. There is no teaching or suggestion in Nakamura to arrive at Appellant's claim.

Additionally, there is not a reasonable expectation of success in a modification of Nakamura that would result in the presently claimed invention. Appellant respectfully refers the Board to the "Background Art" section of the present specification, which describes at least two published HGF formulations, examples of which are described as including, for example, human serum albumin, mannitol, lysine, arginine, glycine, and alanine, as stabilizing agents. However, each of these formulations is described as being unacceptable: one for lack of long-term stability, and the other for being undesirable for human administration. It is respectfully submitted that

modifying or changing the additives in HGF formulations can result in unexpected results and undesirable final products. Without more, there is no reasonable expectation of success in a modification of Nakamura.

It is unclear why claim 1 is included in this rejection, as it does not include the "amount . . . sufficient" element of claim 16, which is apparently the point of this rejection. Additionally, the rejection makes clear that the Examiner believes that all of the elements of claim 1 are explicitly taught by Nakamura ("The reasons why the teachings of Nakamura meet the limitations of claim 1 are presented in the previous paragraphs.") That this rejection is intended for claim 16 is reinforced by the Advisory Action, which states that "Rejections under §§ 102/103 are appropriate when the prior art reference appears to disclose the claimed invention except that it is silent as to an inherent property. MPEP 2112(III). Here, the reference is silent as to whether or not the amount of arginine included is sufficient to prevent HGF aggregate formation." (Advisory Action, page 3, lines 11-13.)

Appellant respectfully notes that Nakamura has been discussed above in detail, as to the rejection of claim 1 for anticipation. Appellant notes that claim 16 depends from claim 1 and thus, includes all of the same elements as claim 1. To the extent that Appellant's points above were made with regard to the elements recited in claim 1, they are equally applicable to claim 16. Additionally, Appellant respectfully submits that there is nothing in Nakamura that suggests that the amount of stabilizing agent should be sufficient to prevent HGF aggregate formation. In this regard, Appellant notes that Nakamura makes no mention of any stability problem, either with or without lyophilization. Thus, Appellant respectfully submits that there is nothing in Nakamura that would suggest the use of an amount of a stabilizing agent sufficient to prevent aggregation.

For at least these reasons, Appellant respectfully submits that Nakamura does not anticipate or render obvious claim 1 or 16, and respectfully requests withdrawal of the rejections for anticipation or obviousness over Nakamura.

C) Whether claims 1, 3, 4, and 6-16 are obvious over Nakamura (European Application No. 0456188 A1) in view of Tanaka (WO 97/02832).

1. Rejections of Claims 1 and 3

Appellant has noted above the reasons why Nakamura does not anticipate or render obvious the presently claimed invention. Still further, Appellant respectfully submits that Tanaka et al. fails to supply Nakamura's missing teachings and also fails to provide motivation to make any change to Nakamura to arrive at the presently claimed invention.

The Office Action admits that Nakamura does not disclose Appellant's specifically claimed pH range (see claim 10, for example), but relies upon Tanaka et al. for this missing teaching. However, Appellant respectfully submits that a *prima facie* case of obviousness does not result. Initially, Appellant notes that there is nothing in Nakamura that would lead to the selection of a different pH than that disclosed, i.e., pH 7.4. While it is not explicitly stated, it is reasonable to conclude that the choice of pH 7.4 was made to closely match physiological pH. However, there is nothing in Nakamura that would suggest that such pH is undesirable. Thus, there is no reason to turn to the disclosure of Tanaka et al. for the choice of a different pH.

Moreover, if anything, Tanaka et al. teaches away from the present invention, which requires a concentration of less than 5 mg/ml. Tanaka et al. specifically states that the solubility of HGF varies with pH and that the solubility is 0.1 to 5 mg/ml at pH 7, but the solubility is over 20 mg/ml at pH 5. (Tanaka et al., paragraph [0018]). Tanaka et al. then proceeds to state that therefore, "it is *preferred* to keep the pH around 5.0 to 6.0." (Id., emphasis added.) Thus, Tanaka et al. clearly suggests a higher concentration of HGF than 5 mg/ml.

Appellant respectfully submits that a *prima facie* case of obviousness of claims 1 and 3 does not result from the combination of Nakamura and Tanaka and respectfully requests withdrawal of the rejection for obviousness.

2. Rejection of Claim 4

The rejection of claim 4 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 4 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection of claim 4 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

3. Rejection of Claim 6

The rejection of claim 6 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 6 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection of claim 6 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

4. Rejection of Claim 7

The rejection of claim 7 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 7 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection of claim 7 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not suggest the features as recited in claim 7, which further includes that the buffering agent is a phosphoric acid salt.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

5. Rejection of Claim 8

The rejection of claim 8 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 8 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection of claim 8 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 8, which further requires that the aqueous solution before lyophilization have a pH and an osmotic pressure ratio desirable as an injection.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

6. Rejection of Claim 9

The rejection of claim 9 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 9 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 9 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 9, which further requires that the aqueous solution obtained after redissolution have a pH and an osmotic pressure ratio desirable as an injection.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

7. Rejection of Claim 10

The rejection of claim 10 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 10 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 10 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 10, which further requires that a pH of the aqueous solution before lyophilization be in the range of 5 to 6.5.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

8. Rejection of Claim 11

The rejection of claim 11 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 11 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 11 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 11, which further requires that a pH of the aqueous solution obtained after redissolution be in the range of 5 to 6.5.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

9. Rejection of Claim 12

The rejection of claim 12 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 12 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 12 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 12, which further requires that the preparation contain a surface active agent.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

10. Rejection of Claim 13

The rejection of claim 13 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 13 is dependent upon and includes the subject matter recited in claim 12. Therefore, the obviousness rejection of claim 13 is without appropriate basis for at least the reasons set forth by Appellant with respect to claims 12 and 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 13, which further requires that the surface active agent be a nonionic surface active agent.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

11. Rejection of Claim 14

The rejection of claim 14 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 14 is dependent upon and includes the subject matter recited in claim 13. Therefore, the obviousness rejection of claim 14 is without appropriate basis for at least the reasons set forth by Appellant with respect to claims 13, 12, and 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 14, which further requires that the nonionic surface active agent be a polyoxyethylene ether surface active agent.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

12. Rejection of Claim 15

The rejection of claim 15 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 15 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 15 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 15, which further requires that the preparation be prepared in a vial or ampoule.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

13. Rejection of Claim 16

The rejection of claim 16 under 35 U.S.C. § 103 as obvious over Nakamura in view of Tanaka is in error, the decision of the Examiner to finally reject this claim should be reversed, and the application should be remanded to the Examiner.

Appellant notes that claim 16 is dependent upon and includes the subject matter recited in claim 1. Therefore, the obviousness rejection based upon claim 16 is without appropriate basis for at least the reasons set forth by Appellant with respect to claim 1.

Moreover, Nakamura in view of Tanaka do not teach the combination of features as recited in claim 16, which further requires the stabilizing agent in an amount sufficient to prevent HGF aggregate formation during at least one of lyophilization and storage after the lyophilization.

Accordingly, the obviousness rejection based upon Nakamura in view of Tanaka should be withdrawn.

CONCLUSION

Each of claims 1, 3, 4, and 6-16 is patentable for the reasons set forth herein. Specifically, the applied art of record does not teach or suggest the combination of features recited in Appellant's claims, and is not combinable in the manner proposed by the Examiner, and even if it were considered to be properly combined, fails to disclose or suggest the unique combination of features recited in Appellant's claims 1, 3, 4, and 6-16. Appellants respectfully request that the Board reverse the decision of the Examiner to reject claims 1, 3, 4, and 6-16, and remand the application to the Examiner for withdrawal of the rejection.

Thus, Appellants respectfully submit that each and every pending claim of the present application meets requirements for patentability, and that the present application and each pending claim are allowable over the prior art of record.

Respectfully submitted,
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Sean Myers-Payne

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October 17, 2006
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VIII. Claims Appendix

1. A lyophilized preparation comprising a hepatocyte growth factor, a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof, for preventing formation of an aggregate of the hepatocyte growth factor, sodium chloride, and a buffering agent, which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL.

3. A lyophilized preparation comprising a hepatocyte growth factor, a stabilizing agent comprising arginine, lysine, histidine, glutamine, proline, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof, for preventing formation of an aggregate of the hepatocyte growth factor, sodium chloride, and a buffering agent, which is prepared from an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL, and capable of preparing an aqueous solution containing the hepatocyte growth factor at a concentration lower than 5 mg/mL by redissolution.

4. The lyophilized preparation according to claim 1, wherein the stabilizing agent comprises arginine, lysine, histidine, glutamic acid, or aspartic acid, or a pharmacologically acceptable salt thereof.

6. The lyophilized preparation according to claim 1, wherein the stabilizing agent comprises arginine, lysine, or histidine, or a pharmacologically acceptable salt thereof.

7. The lyophilized preparation according to claim 1, wherein the buffering agent is a phosphoric acid salt.

8. The lyophilized preparation according to claim 1, wherein the aqueous solution before lyophilization has a pH and an osmotic pressure ratio desirable as an injection.

9. The lyophilized preparation according to claim 1, wherein the aqueous solution obtained after redissolution has a pH and an osmotic pressure ratio desirable as an injection.

10. The lyophilized preparation according to claim 1, wherein a pH of the aqueous solution before lyophilization is in the range of 5 to 6.5.

11. The lyophilized preparation according to claim 1, wherein a pH of the aqueous solution obtained after redissolution is in the range of 5 to 6.5.

12. The lyophilized preparation according to claim 1, which further contains a surface active agent.

13. The lyophilized preparation according to claim 12, wherein the surface active agent is a nonionic surface active agent.

14. The lyophilized preparation according to claim 13, wherein the nonionic surface active agent is a polyoxyethylene ether surface active agent.

15. The lyophilized preparation according to claim 1, which is prepared in a vial or an ampoule.

16. The lyophilized preparation according to claim 1, which contains the stabilizing agent in an amount sufficient to prevent HGF aggregate formation during at least one of lyophilization and storage after the lyophilization.

IX. Evidence Appendix

Ex parte Bobsein et al., (Appeal No. 2005-1332); and

In re Arkley, 172 U.S.P.Q. 524 (CCPA 1972)

VIII. Related Proceedings Appendix

None.

[2] Defendant, by its answer, asserts that the patents in question are invalid for 14 different reasons. Misjoinder or nonjoinder of inventors is simply one of the reasons defendant has alleged. This Court can see no advantage in granting a separate hearing on the issue of nonjoinder or misjoinder; indeed, if such a hearing were granted, the parties might have to produce the same witnesses and evidence two different times. This Court is of the opinion that the issue of nonjoinder or misjoinder of inventors is no more of a threshold legal issue than any of the other grounds asserted for patent invalidity. Accordingly, this Court holds defendant has no right to a separate hearing on the issue of patent invalidity due to misjoinder or nonjoinder of inventors under Rule 42(b) of the Federal Rules of Civil Procedure.

III. Rule 12(d)

Rule 12(b) (7) of the Federal Rules of Civil Procedure allows a party to move to dismiss a claim for failure to join a party under Rule 19. Rule 12(d) states:

> The defenses specifically enumerated (1)-(7) in subdivision (b) of this rule, whether made in a pleading or by motion * * * shall be heard and determined before trial on application of any party, unless the court orders that the hearing and determination thereof be deferred until the trial.

[3] Defendant apparently asserts the alleged nonjoined or misjoined inventors are necessary parties to this suit under Rule 19. This contention is without merit. The inventors are not necessary parties for a just adjudication of this suit; they are only involved tangentially in the instant case in that their nonjoinder or misjoinder in the patent application may have rendered the patent invalid. Accordingly, this Court holds defendant has no right to a separate hearing on the issue of patent invalidity due to misjoinder or nonjoinder of inventors under Rule 12(d) of the Federal Rules of Civil Procedure.

Accordingly, it is hereby ordered, adjudged and decreed that defendant's motion for a separate hearing on the issue of patent invalidity due to nonjoinder or misjoinder of inventors is denied.

Court of Customs and Patent Appeals

In re ARKLEY, EARDLEY, AND LONG

No. 8553 Decided Feb. 17, 1972

PATENTS

1. Patentability — Anticipation — In general (§51.201)

Patentability — Invention — In general (§51.501)

Fact that rejections under 35 U.S.C. 103 are proper where subject matter claimed "is not identically disclosed or described" in prior art indicates that rejections under section 102 are proper only when claimed subject matter is identically disclosed or described in prior art.

2. Court of Customs and Patent Appeals — In general (§28.01)

Court does not grant patent where it reverses rejection of claim; it is Patent Office which grants patents, not the court.

3. Court of Customs and Patent Appeals — In general (§28.01)

Pleading and practice in Patent Office — Rejections (§54.7)

Court's reversal of rejection of claim on ground that it is anticipated by reference under 35 U.S.C. 102 leaves Patent Office free to reject claim as obvious under section 103 in view of reference since such latter rejection was not before court.

4. Court of Customs and Patent Appeals — Weight given decisions below (§28.35)

It is not court's practice to apply a different standard in cases in complex areas of technology than it does in easily understood cases.

Particular patents—Cephaloridine

Arkley, Eardley, and Long, Cephaloridine, rejection of claim 30 reversed.

Appeal from Board of Appeals of the Patent Office.

Application for patent of Vincent Arkley, Stephen Eardley, and Alan Gibson Long, Serial No. 329,212, filed Dec. 9, 1963; Patent Office Group 120. From decision rejecting claim 30, applicants appeal. Reversed; Baldwin, Judge, concurring with opinion in which

Almond, Judge, joins; Worley, Chief Judge, dissenting with opinion.

J. William Pike and Bacon & Thomas, both of Washington, D. C. (Fred T. Williams, John J. Cavanaugh, and Pendleton, Neuman, Williams & Anderson of counsel) for appellants.

S. Wm. Cochran (Jack E. Armore and Henry Willard Tarring II of counsel) for Commissioner of Patents.

Before Worley, Chief Judge, and Rich, Almond, Baldwin, and Lane, Associate Judges.

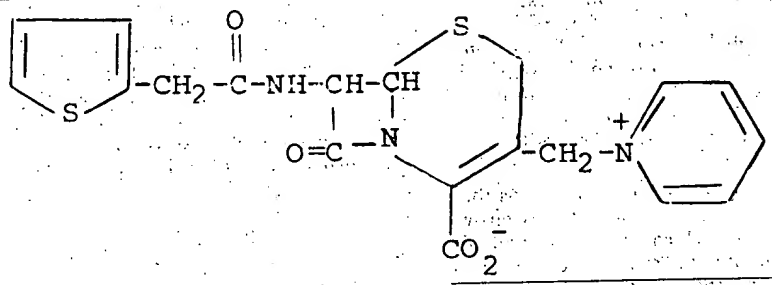
Rich, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the rejection of claim 30 in appellants' application serial No. 329,212, filed December 9, 1963, for a cephalosporin-type antibiotic known as cephaloridine. No claim has been allowed. We reverse.

The Subject Matter Claimed

The appealed claim is drawn to a single compound, by structural formula, and reads:

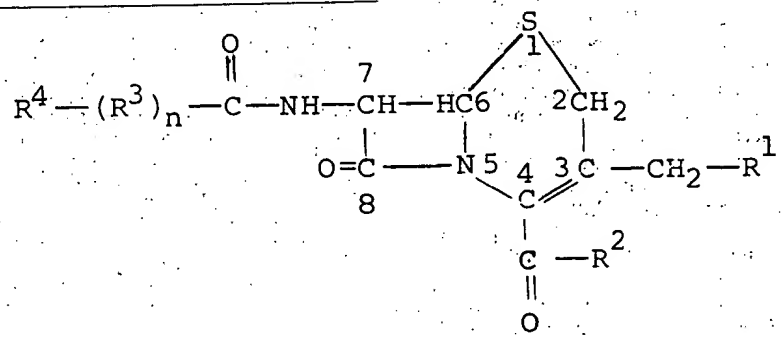
30. A compound of the formula



This compound is said to be a broad spectrum antibiotic, effective against both gram-positive and gram-negative micro-organisms, and to possess many other virtues not relevant here because of the nature of the rejection.

The Rejection

Appellants' claim has been rejected as *anticipated* by U. S. patent No. 3,218,318, issued to Edwin H. Flynn November 16, 1965, on an application filed in the United States August 31, 1962, and available against appellants' application by virtue of 35 U.S.C. 102(e) as of its filing date. This reference discloses generically a class of cephalosporin-type compounds having the following structural formula:



in which R^1, taken alone, is —OH, C_1-C_8 acyloxy, or tertiary-amino, R^2 is —OH when R^1 is —OH, R^2 is —OH when R^1 is C_1-C_8 acyloxy, R^2 is —O^- when R^1 is tertiary-amino, R^1 and R^2, when taken together, are —O—, n is zero or 1, R^3 is C_1-C_6 alkylene, and R^4 is a heteromonocyclic radical containing O, S, and/or N. Appellants "conservatively" estimate that over 230,000 compounds (including, concededly, theirs) are embraced within this generic disclosure, and the board in turn conceded that, "If this were the only anticipatory disclosure in the reference," the disclosure would be "too diffuse" to support a 102 rejection.

However, the board found: (1) that Flynn's examples 4 and 10 "adequately disclose the exact precursors of the presently claimed compound"; (2) that Flynn's statement that

> Cephalosporin C is also readily converted into compounds of the cephalosporin C_A

type by refluxing in aqueous solution with an excess of pyridine, for example, as described in Belgian Patent 593,777.

was adequate to teach how to convert the C-type precursors disclosed in examples 4 and 10 to the C_A-type compound claimed by appellants; and (3) that Flynn's statement that, "in general, those compounds which possess the cephalosporin C_A nucleus are more effective antibacterially than those containing the cephalosporin C nucleus", provided the "motive * * * to follow this additional teaching * * *." Putting these three findings together, the board held that

> The indicated combination of Example 4 or 10 with * * * [the teaching of how to convert "Cephalosporin C * * * into compounds of the cephalosporin C_A type"] is not a matter of obviousness within the meaning of 35 U.S.C. 103 but of direct teaching within the four corners of the patent.

The effect of this holding, of course, was that the board did not have to look at the extensive objective evidence which appellants had offered to rebut any inference of obviousness which might be thought to arise from the teachings of the Flynn patent.

Opinion

[1] The sole issue in this case is whether cephaloridine is "described" in the Flynn patent within the meaning of that word in 35 U.S.C. 102(e).[1] It is to be noted that rejections under 35 U.S.C. *103* are proper where the subject matter claimed "is not *identically* disclosed or described" (emphasis ours) in "the prior art," indicating that rejections under 35 U.S.C. 102 are proper only when the claimed subject matter *is* identically disclosed or described in "the prior art." Thus, for the instant rejection under 35 U.S.C. 102(e) to have been proper, the Flynn reference must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference. Such picking and choosing may be entirely proper in the making of a 103, obviousness rejection, where the applicant must be afforded an opportunity to rebut with objective evidence any inference of obviousness which may arise from the *similarity* of the subject matter which he claims to the prior art, but it has no place in the making of a 102, anticipation rejection.

In this case we have no difficulty in deciding that the portions of the Flynn reference relied upon by the Patent Office do not identically describe the claimed subject matter. As appellants point out, the compounds of Flynn's examples 4 and 10 are the "exact precursors" of appellants' compound "only to the extent that appellants have discovered that cephaloridine will be formed *if* the acid [disclosed in example 10] is first selected and *then* carefully reacted with a particular tertiary amine *which also must be selected*." (Emphasis in original.) Of course, it does appear that the "particular tertiary amine" to which appellants refer is pyridine, which is mentioned elsewhere in Flynn as an example of the class of reactants [2] with which a particular cephalosporin C-type compound (namely, cephalosporin C itself) may be converted into compounds of the cephalosporin C_A type, but there is nothing in the teachings relied upon by the Patent Office which "clearly and unequivocally" directs those skilled in the art to make this selection nor any indication that Flynn ever made the selection himself. Similarly, while it is reasonable to suppose that Flynn's teaching that "in general, those compounds which possess the cephalosporin C_A nucleus are more effective antibacterially than those

[1] At one time appellants contended that Flynn was not an "enabling disclosure," In re LeGrice, 49 CCPA 1124, 301 F.2d 929, 133 USPQ 365 (1962), but we gather that they have abandoned that contention on appeal; although there is still an ambiguous reference to LeGrice in their briefs.

[2] The parties argue, in-essence, about whether the words "for example" in the sentence "Cephalosporin C is also readily converted into compounds of the cephalosporin C_A type by refluxing in aqueous solution with an excess of pyridine, for example, as described in Belgian Patent 593,777" refers to the word "pyridine" or the words "as described." Appellants argue that "it is to be stressed that pyridine is only being suggested as an *example* of the tertiary amine[s] suitable for the reaction with the prior art compound cephalosporin C," while the solicitor seems to be taking the position that Flynn's specification would be read as indicating that the Belgian patent was one place among many where those skilled in the art could learn how to react cephalosporin C with pyridine. While the matter is not free from doubt, we think it more likely that the sentence would be read in the former way because the presence of the word "type" after "C_A" and not after "C" suggests that one particular C-type compound (namely, cephalosporin C itself) can be changed into *various* C_A-type compounds by refluxing it with an excess of the proper reactant. This interpretation of the controverted sentence is reinforced by the next sentence in Flynn's specification, which is as follows:

> The reaction is applicable in general to the tertiary amines, of which numerous examples are given above, yielding corresponding derivatives of the cephalosporin C_A type wherein the tertiary amine is attached to the methyl group in the 3 position of the thiazine ring, and forms an inner salt with the carboxyl group in the 4 position.

containing the cephalosporin C nucleus" would provide some "motive" for those that followed him to concentrate their investigations on compounds possessing the cephalosporin C_A nucleus, that motivation is a very general one, pointing to no particular one of the myriads of compounds, actual and potential, containing the cephalosporin C_A nucleus.

The board, apparently recognizing the weakness of its position in attempting to arrive at an anticipation by combining the disclosures in examples 4 and 10 with the above-quoted teaching elsewhere in the patent of how to convert a particular, different cephalosporin C-type compound into cephalosporin C_A-type compounds, postulates certain teachings which might have been in the reference patent any one of which, according to it, if present would have removed all doubt concerning the completeness of the anticipation.[3] The simple answer to the board's argument is that these teachings were not contained in the Flynn patent and that we do not regard the teachings which were there and which *were* relied upon below as the equivalent of those which were postulated by the board. We do not read into references things that are not there.

Although the board declined to discuss four relatively recent decisions by this court in cases involving description requirements in various sections of the patent statute [4] on the ground that "the issue [of anticipation] is essentially a factual one," it did consider the older case of In re Armstrong, 47 CCPA 1084, 280 F.2d 132, 126 USPQ 281 (1960), to be "apposite on this point." There this court reversed the board, finding support for process claims reciting the use of sodium carbonate although the example in the specification advanced as support for the claims used sodium hydroxide. However, in the first place, the Armstrong case was decided well before the line of cases beginning with Ruschig II, supra,[5] which have significantly tightened up on the application of the description requirement in the first paragraph of 35 U.S.C. 112, and, in the second place, the opinion in Armstrong points out that appellants' specification stated that alkali hydroxides and alkali carbonates could be used "interchangeably" in their process. The opinion stresses this equivalency, which involved a tiny number of variables in comparison to the situation here. There are no equivalent "blaze marks," to quote the language of Ruschig II, in the case at hand.

Accordingly, we will not sustain the rejection on the ground on which it was made. Concerning the rejection as it is reformulated by the dissent, we express no opinion. It may be that the Patent Office *should* have relied upon the portions of Flynn on which the dissent relies, or it may be that they had very good reasons for not doing so. In any event, they did *not* rely on those teachings in Flynn, and appellants have therefore had no opportunity to comment thereon. We do not conceive that it is part of our duty to make better rejections for the Patent Office, even if we could be sure that we really were making a "better rejection," nor do we think that it would be consistent with the requirements of due process for us to do so for the first time on appeal, without notice to the affected party.

[2] Furthermore, we point out that we are not granting appellants a patent, if that is what the dissent means by "bestowing on the applicants a license to litigate." We are simply reversing a rejection on the ground that the claim on appeal is *anticipated* under § 102 by Flynn. It may well be that it is unpatentable because *obvious* under § 103 in view of Flynn, [3] but no such rejection is before us. The Patent Office is free to make such a rejection after our decision in this case should it think it appropriate. In re Ruschig, 54 CCPA 1551, 379 F.2d 990, 154 USPQ 118 (1967); and In re Fisher, 58 CCPA ___, 448 F.2d 1406, 171 USPQ 292 (1971). In any event, it is the Patent Office which grants patents, not this [4] court. It may further be observed that

[3] These postulations were contained in the following passage from the board's opinion:

> There would be no doubt of the completeness of the anticipation if, paraphrasing column 3, lines 47 to 50, the following language were present at the end of each of Examples 4 and 10:
>
> "This compound is also readily converted into a compound of the cephalosporin C_A type by refluxing in aqueous solution with an excess of pyridine, for example, as described in Belgian Patent 593,777."
>
> Likewise, there would be no question of the applicability of column 3, lines 47 to 50, if that sentence were introduced by the words "Any one of the compounds of Examples 1 to 15 is also readily converted into compounds of the C_A type * * *" or "Any one of the herein specifically named cephalosporin C compounds is also readily converted into compounds of the C_A type * * *."

[4] In re Ruschig, 52 CCPA 1238, 343 F.2d 965, 145 USPQ 274 (1965); In re Kalm, 54 CCPA 1466, 378 F.2d 959, 154 USPQ 10 (1967); In re McLamore, 54 CCPA 1544, 379 F.2d 985, 154 USPQ 114 (1967); and In re Ruschig, 54 CCPA 1551, 379 F.2d 990, 154 USPQ 118 (1967) (Ruschig II).

[5] Among the most recent of these are In re Ahlbrecht, 58 CCPA 848, 435 F.2d 908, 911, 168 USPQ 293, 296 (1971); In re Lukach, 58 CCPA 1233, 442 F.2d 967, 969, 169 USPQ 795, 796 (1971); and Fields v. Conover, 58 CCPA 1366, 443 F.2d 1386, 1391-92, 170 USPQ 276, 279-80 (1971).

it is not now the practice in this court, if it ever was, to apply a different standard in cases which are in "complex areas of technology" than we do in easily understood cases.

The decision of the board is *reversed.*

BALDWIN, Judge, concurring, with whom ALMOND, Judge, joins.

While I agree that the disclosure in the Flynn patent is insufficient to constitute an anticipation of the claimed invention, I cannot agree with the language of the principal opinion that for the rejection based on an anticipation to have been proper, "the Flynn reference must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference."

The test which determines whether an invention has been anticipated by a reference is whether the description of the invention in the reference is "sufficient to put the public in possession of the invention." In re LeGrice, 49 CCPA 1124, 1131, 301 F.2d 929, 933, 133 USPQ 365, 369 (1962), citing Curtis on Patents, 3d ed., Sec. 378 and Seymore v. Osborne, 78 U.S. (11 Wall.) 516, 555 (1870). See also In re Brown, 51 CCPA 1254, 329 F.2d 1006, 141 USPQ 245 (1964); In re Sheppard, 52 CCPA 859, 339 F.2d 238, 144 USPQ 42 (1964); In re Bird, 52 CCPA 1290, 344 F.2d 979, 145 USPQ 418 (1965); In re Borst, 52 CCPA 1398, 345 F.2d 851, 145 USPQ 554 (1965); In re Baranauckas, 55 CCPA 1204, 395 F.2d 805, 158 USPQ 24 (1968); In re Hoeksema, 55 CCPA 1493, 399 F.2d 269, 158 USPQ 596 (1968); In re Wilder, 57 CCPA 1314, 429 F.2d 447, 166 USPQ 545 (1970); and In re Moore, 58 CCPA 1341, 444 F.2d 572, 170 USPQ 260 (1971). I find it unreasonable to assume that Judge Rich and Judge Lane intend to overrule this long line of cases sub silentio. If what they intend is merely to rephrase the accepted test so as to simplify its application, they have missed the mark.

The language used in the principal opinion would not in fact simplify the determination of the suitability of a reference as an anticipation under 35 U.S.C. 102. That language requires the tribunal to analyze the teachings of a reference to determine which are equivocal and which are unequivocal. It must also be determined which disclosures are directly related to each other by the teachings of the reference, thus making picking and choosing proper, and which disclosures are only indirectly related, or are not related at all. This is no simpler than reading the reference as a whole and determining what it fairly teaches to one of ordinary skill in the art.

The more important difficulty with the position taken in the principal opinion is that it misdirects the inquiry. It directs the tribunal to analyze the structure of the reference rather than its content. The real question is not how logically the various disclosures in a reference are related to each other, it is rather *what the reference fairly teaches to one of ordinary skill in the art,* no matter how ineptly it does so. Of course, the more logically the reference is laid out the clearer will be its teachings and the easier will be the job of those who must interpret it. But the law requires us to determine whether the invention has been *identically* described, *not* whether it has been *logically* described by the reference.

The Flynn reference has been described in both the principal opinion and the dissent. I will therefore merely state what I would consider that reference fairly teaches to one of ordinary skill in the art. Flynn does disclose the cephalosporin C_A-type precursor of the instantly claimed C_A-type compound. The precursor is one of approximately 38 C-type compounds specifically disclosed. Flynn teaches how C-type compounds can be converted to C_C-type compounds by heating with water under acid conditions, or converted to C_A-type compounds by refluxing in an aqueous solution with an excess of a tertiary amine. Pyridine is specifically referred to as an example of a tertiary amine which will work, but a list of over 15 other tertiary amines is given. With regard to antibacterial effect, Flynn discloses that C_C-type compounds are not as good as C-type compounds, and C-type compounds are not as good as C_A-type compounds. As pointed out by the dissent, Flynn considered the C_C-type and C_A-type analogues of the specifically disclosed C-type compounds to be some of the compounds "available in accordance with the present invention."

I would not place as much weight as the dissent does on Flynn's statement that the C_C-type and C_A-type analogues were considered within the scope of the invention. Such statements in the specification regarding the breadth of the invention are generally too speculative to be given great weight. In the instant case, all that statement does is focus some additional attention on C_C-type compounds and C_A-type compounds. In my view, that attention is not a significant addition to the disclosure, since Flynn's remarks regarding the antibacterial activity of the compounds are sufficient to emphasize the C_A-type compounds as the most desirable. The difficulty is that Flynn gives 38 or so possible precursors and 15 or so tertiary amines which will react with those precursors to form C_A-

type compounds. The Flynn disclosure, considered as a whole, does not sufficiently direct one skilled in the art to the claimed compound.

I disagree with the principal opinion on one last point. The opinion seems to suggest that we violate due process whenever we consider portions of a reference not specifically mentioned by the examiner or the board. I know of no requirement that the examiner and the board must list the sentences in the reference upon which they rely, nor can I see any sense in imposing such a requirement. All of the disclosure of a reference must be considered for what it fairly teaches one of ordinary skill in the art. In re Meinhardt, 55 CCPA 1000, 1004, 392 F.2d 273, 276, 157 USPQ 270, 272 (1968). As Judge Smith aptly stated in Meinhardt:

> [T]he board relied on the same [reference] as the examiner to sustain the rejection. Assuming arguendo that the board relied on a portion of the [reference] ignored by the examiner, this could not constitute a new ground of rejection in view of In re Azorlosa, 44 CCPA 826, 241 F.2d 939, 113 USPQ 156 (1957), which holds, in pertinent part, that it is proper for the court and necessarily, the board, to consider everything that a reference discloses.

In re Meinhardt, supra, 55 CCPA at 1008-09, 392 F.2d at 280, 157 USPQ at 275. See also In re Halley, 49 CCPA 793, 296 F.2d 774, 132 USPQ 16 (1961); In re Van Mater, 52 CCPA 1076, 341 F.2d 117, 144 USPQ 421 (1965).

WORLEY, Chief Judge, dissenting.

I cannot agree with the majority that cephaloridine is not "described" in the Flynn patent in the sense of 35 U.S.C. 102(e).

It cannot be said, of course, that cephaloridine per se is *explicitly* named by Flynn, but a clear implicit description is sufficient. In re Baranauckas, 43 CCPA 727, 228 F.2d 413, 108 USPQ 226 (1955). Reference to the Flynn disclosure will establish, I submit, that such a description exists in the present instance.

The principal opinion has set forth portions of the generic and more specific disclosure of Flynn relied on by the board. The class of cephalosporin compounds disclosed generically by Flynn may be divided into several groups, of which the groups designated as cephalosporin C type and cephalosporin C_A type (cephaloridine is a C_A type) are of particular interest here.[1] After observing that "in general, those compounds which possess the cephalosporin C_A nucleus are more effective antibacterially than those containing the cephalosporin C nucleus," Flynn goes on to name and describe several specific compounds having the cephalosporin C nucleus:

> The *following examples,* together with the [*15*] *operating examples* appearing hereinafter, will illustrate the types of compounds available *in accordance with the present invention:*
>
> * * *
>
> [There follows a list of 24 specific 7-acylamidocephalosporanic acids, i.e., cephalosporin C type compounds. As noted by the board, two of the 15 operating examples referred to, examples 4 and 10, describe the potassium and sodium salts of 7-(2'-thienyl-acetamido) cephalosporanic acid (the sodium salt is known commercially as "cephalothin"). Appellant reacts that particular cephalosporanic acid with the tertiary amine pyridine to obtain the claimed cephalosporin C_A type compound, cephaloridine.]
>
> and the like, *including* the *cephalosporin* C_A and cephalosporin C_C *analogues thereof.* [Emphasis supplied.]

There can be no doubt from the above disclosure that Flynn regarded the cephalosporin C_A analogues of each of the mentioned cephalosporin C type compounds to form an integral part of his disclosed invention. In particular, it is evident that Flynn does explicitly disclose the cephalosporin C_A analogues of Examples 4 and 10. As to how to obtain those C_A analogues from cephalosporin C type compounds, he states that compounds of the cephalosporin C_A class "can be obtained by applying to appropriate 7-acylamidocephalosporanic acids the conversion procedures of Belgian Patent 593,777." Flynn had earlier stated, as pointed out by the board and majority here, just what those "conversion proceudres" are, viz., that "Cephalosporin C is also readily converted into compounds of the cephalosporin C_A type by refluxing in aqueous solution with an excess of *pyridine,* for example, as described in Belgian Patent 593,777."[2] [Emphasis supplied.]

[1] For purposes here, cephalosporin C_A type compounds differ from cephalosporin C type compounds in the R^1 substituent attached to the methyl group located at the 3 position of the basic cephalosporin (cephem) nucleus. The C_A type compounds have a tertiary amine attached to that methyl group, whereas the C type compounds have an acyloxy group so attached. See the formula and definitions under "The Rejection" portion of the principal opinion. Cephaloridine has a pyridine radical attached to the 3-methyl group.

[2] Belgian 593,777 does indeed disclose obtaining of "antibiotic substances which are transformation products of Cephalosporin C and are called

I think it is clear that Flynn directs one of ordinary skill in the art, who is interested in particular cephalosporin C_A analogues of the 37 or so cephalosporin C type compounds Flynn specifically discloses, to prepare them by reacting the appropriate 7-acylamido cephalosporanic acid with the particular tertiaryamine pyridine. Following those instructions, one of ordinary skill in this art would easily prepare the C_A (pyridine) analogue of the particular cephalosporin C type compound described in Examples 4 and 10, which analogue is cephaloridine. Each and every one of the C_A (pyridine) analogues of that relatively small number of cephalosporin C compounds has been effectively, or implicitly, described by Flynn. To be sure, appellant is claiming only one of them, but it is no less described than any of the others.

From what has been said of Flynn, it should be evident that there is no need in this case for those skilled in the art to resort to picking and choosing various disclosures unrelated to each other by the reference teachings, as the principal opinion implies. On the contrary, the disclosures of cephalosporin C compounds, cephalosporin C_A compounds, and how to make them are all interrelated by Flynn himself. It should also be evident that the reference itself contains the full equivalent of the board's "postulations", which are quoted in footnote 3 and later deprecated in the principal opinion. Finally, it should be evident that the rejection rationale as stated herein is substantially identical to—not a reformulation of—that expressed by the board.

The principal opinion also criticizes the board for reading into references "things that are not there." My difficulty with that position stems from its disregard for the "things"—or "blaze marks"—that *are* there. In my opinion, the majority is groping for reversible error where none exists. As far back as 40 years, and over the years since, it has been a firm principle that this court would not reverse decisions of the tribunals below in highly complex areas of technology unless manifest error was shown. See, e.g., In re Wietzel, 17 CCPA 1079, 39 F.2d 669, 5 USPQ 177 (1930); In re Bertsch, 30 CCPA 813, 132 F.2d 1014, 56 USPQ 379 (1942); In re Stoll, 34 CCPA 1058, 161 F.2d 241, 73 USPQ 440 (1947). Needless to say, such error has not been shown here.

Although the majority would undoubtedly disclaim the notion, I cannot help but feel that it is resolving doubt on the issue presented in favor of the applicants. In doing so, this court is not doing the applicants or the public any favor. Rather it is bestowing on the applicants a license to litigate of dubious validity at a time when, it is reliably estimated, 80% of contested patents are being held invalid in other federal courts. And the other sad result here is to take from the public that which is already theirs by imposing on them a monopoly that should not exist. Appellants have given the public nothing it had not already been given by Flynn. I would remind my colleagues that patents are not like party favors to be passed out at random. The enabling statutes established under the Constitution clearly require more than appellants have offered as a quid pro quo to the public in exchange for the monopoly the majority awards them.

I find no error in the board's decision, and would affirm.

Cephalosporin C_A compounds" by "treatment of Cephalosporin C in aqueous solution with a weak, tertiary base, for example pyridine, collidine or quinoline. If pyridine is used, the antibiotic obtained is called Cephalosporin C_A (pyridine)."

Court of Customs and Patent Appeals

In re MANTELL, SMITH, GALIANO, AND RANKIN

No. 8577 Decided Feb. 17, 1972

PATENTS

Particular patents—Formaldehyde

Mantell, Smith, Galiano, and Rankin, Formaldehyde Block Copolymers and Processes, claims 6, 16, and 18 of application allowed; claims 1 and 3 refused.

Appeal from Board of Appeals of the Patent Office.

Application for patent of Gerald J. Mantell, Wayne E. Smith, Francis R. Galiano, and David Rankin, Serial No. 313,192, filed Oct. 2, 1963; Patent Office Group 140. From decision rejecting claims 1, 3, 6, 8, 9, 11, 12, 16, and 18, applicants appeal. Affirmed as to claims 1 and 3; reversed as to claims 6, 16, and 18; remanded as to claims 8, 9, 11, and 12.

WILLIAM H. DRUMMOND, Phoenix, Ariz., ERIC P. SCHELLIN, Arlington, Va., and RICHARD L. KELLY, Kansas City, Mo., for appellants.

S. WM. COCHRAN (FRED W. SHERLING, of counsel) for Commissioner of Patents.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BARRETT RICHARD BOBSEIN,
WILLIAM CHRISTOPHER FINCH,
and
DAVID ALBERT GLEESON

Appeal No. 2005-1332
Application No. 09/774,064

ON BRIEF

Before PAK, WARREN, and TIMM, *Administrative Patent Judges.*

TIMM, *Administrative Patent Judge.*

DECISION ON APPEAL

This appeal involves claims 1 and 3 which are all the claims pending in the application.

We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

INTRODUCTION

Claims 1 and 3 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Japanese Published Unexamined Application 05-170,802 to Hoshino et al. published on July 9, 1993 (Hoshino).[1]

The claims stand or fall together (Brief, p. 4). We select claim 1 to represent the issues on appeal. Claim 1 reads as follows:

> 1. A waterborne pigmented paper or paperboard coating composition comprising pigment comprising 50% to 100%, by weight of said pigment, calcium carbonate and from 1% to 25%, as dry weight by weight of said pigment, of an aqueous polymeric dispersion comprising
>
> (c) 95-25% by weight, based on the weight of the solids of said aqueous polymeric dispersion, of a first emulsion polymer having an average particle diameter of 150 to 3000 nanometers and
>
> (d) 5-75% by weight, based on the weight of the solids of said aqueous polymeric dispersion, of a second emulsion polymer having an average particle diameter of 40 to 600 nanometers
>
> wherein the ratio of said average particle diameter of said first emulsion polymer to said average particle diameter of said second emulsion polymer is from 1.2 to 60,
>
> wherein at least said first emulsion polymer particles, when dry, contain at least one void, and wherein said first emulsion polymer is prepared in the presence of said second emulsion polymer or said second emulsion polymer is prepared in the presence of said first emulsion polymer.

Because the Examiner has established a prima facie case of obviousness, we affirm. Our reasons follow.

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[1]We rely upon and cite to the English translation made of record on March 14, 2005.

OPINION

Hoshino describes a waterborne pigmented paper or paperboard coating composition including, among other things, a pigment containing inorganic pigments and emulsion particles as plastic pigments (Hoshino, ¶ 0016, ll. 6-10). Hoshino notes that hard emulsion particles have been studied as additives for coating agents for reducing coating weight, improving gloss, whiteness, opacity, etc. (Hoshino, ¶ 0002, ll. 1-4). According to Hoshino, the industrial use of these emulsion particles as replacements for inorganic pigments such as kaolin, calcium carbonate, talc, satin, etc. in the paper coating field is increasing (Hoshino, ¶ 0002, ll. 4-7).

Hoshino describes emulsion particles with a bimodal particle distribution (Hoshino, ¶ 0009-10). The Examiner finds, and Appellants do not dispute, that the Examples of Hoshino show the claimed proportion and diameters of the two emulsion polymer particles required by claim 1 (Answer, p. 3; Brief and Reply Brief in their entirety). Nor is there any dispute that the emulsion polymer particles of Hoshino meet the other requirements of the aqueous polymeric dispersion recited in claim 1 (Answer, p. 3; Brief and Reply Brief in their entirety). Appellants' arguments focus instead on the calcium carbonate concentration recited in the claim. The issue, therefore, is whether Hoshino sufficiently describes including calcium carbonate in the composition in an amount sufficient to anticipate the composition of the claim or whether there is a sufficient reason, suggestion, or motivation to add calcium carbonate in the claimed amount such that there is a prima facie case of obviousness.

Anticipation

We agree with Appellants that Hoshino does not disclose each and every limitation of claim 1 with sufficient specificity such that the claimed composition is anticipated. In order to anticipate, Hoshino must clearly and unequivocally disclose the claimed invention or direct those skilled in the art to the invention without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference. *In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972). "Such picking and choosing may be entirely proper in the making of a 103, obviousness rejection, where the applicant must be afforded an opportunity to rebut with objective evidence any inference of obviousness which may arise from the similarity of the subject matter which he claims to the prior art, but it has no place in the making of a 102, anticipation rejection." *Arkley*, 455 F.2d at 587-88, 172 USPQ at 526.

The Examiner's finding of anticipation is based upon the disclosure in Hoshino of a concentration of aqueous polymeric dispersion in the range of 3-30% as a preferred embodiment coupled with a disclosure calcium carbonate in a list of six inorganic pigments. But Hoshino, in fact, does not limit the inorganic pigments to the six compounds specifically recited. What Hoshino states is that "[s]ome examples of the inorganic pigments include kaolin, calcium carbonate, talc, satin white, titanium dioxide, etc." Moreover, the only exemplified composition contains an inorganic pigment mixture of 63 parts of kaolin clay with 27 parts of calcium carbonate. Therefore, mixtures are also contemplated. One of ordinary skill in the art, in fact, is

directed to picking and choosing an inorganic pigment from a much larger genus than acknowledged by the Examiner. Moreover, there is no direct disclosure of a pigment mixture containing an amount of calcium carbonate within the claimed range coupled with an amount of emulsion particles in the claimed range of 1-25%. To obtain the composition of claim 1, one of ordinary skill in the art must both pick and choose among the various acceptable inorganic pigments and conduct some experimentation, albeit routine in nature, with regard to the amount of inorganic pigment and emulsion particles to include in the pigment. Therefore, we find the disclosure of Hoshino lacks the specificity required for a finding of anticipation.

Obviousness

The question of obviousness, however, stands on a different footing. As stated above, picking and choosing within the teachings of the prior art is entirely proper in the context of an obviousness rejection. *Arkley*, 455 F.2d at 587-88, 172 USPQ at 526. Routine experimentation involving such parameters as concentration is also proper in the context of obviousness. *See In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). Note also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim 1 requires that calcium carbonate be present in the pigment in an amount of 50-100 weight %. The claim further requires that the aqueous dispersion of emulsion polymers be present in an amount of 1-25%, as dry weight by weight of the pigment. The Examiner finds that Hoshino describes, as a preferred embodiment, including the emulsion polymer particles in

an amount of 3-30% by weight of the pigment and concludes, therefore, that the inorganic pigment must be present in an amount of 70-97% by weight of the pigment in that preferred embodiment (Answer, p. 3). Appellants traverse this finding on the basis that "this is not the literal disclosure of Hoshino." (Brief, p. 4). Appellants' traversal is not persuasive because, even though Hoshino does not say it literally, the disclosure is present. The pigment of Hoshino is a combination of inorganic pigments and the emulsion particles as "plastic pigment" (Hoshino, ¶ 0016, ll. 6-9). The amount of emulsion particles is related in Hoshino as a percentage of the "entire pigments." (Hoshino, ¶ 0017, ll. 1-4). Therefore, the percentage of inorganic pigments is the amount which is not emulsion pigment.[2] We, therefore, find adequate factual support in Hoshino for the finding made by the Examiner, i.e., that Hoshino describes by default including inorganic pigment in an amount of from between 97 and 70% by weight of the entire pigment in the preferred embodiment. That Hoshino includes other less preferred embodiments and examples does not, contrary to the arguments of Appellants (Brief, p. 5), somehow negate the disclosure of the preferred embodiment.

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[2]The words "entire pigments" would be understood by one of ordinary skill in the art to be referring to the combination of emulsion particles as plastic pigments and inorganic pigments. This is the case because inorganic and plastic pigments are the only components that make up the pigment. In fact, the plastic pigments are said to be a replacement for inorganic pigments (Hoshino, ¶ 0002, ll. 4-7). Also note that Hoshino calculates the quantity of other components based on the combined amount of inorganic and plastic pigments (Hoshino, ¶ 0016, ll. 19-22). Moreover, the formulation provided on page 22 of the translation of Hoshino further validates the Examiner's interpretation of the reference as the pigment amounts (clay, calcium carbonate and emulsion particles) add up to 100 parts by weight.

We agree with the Examiner that it would have been obvious to one of ordinary skill in the art to select calcium carbonate as the inorganic pigment in the composition of Hoshino as it is expressly suggested in the reference. It follows then that Hoshino suggests the use of a pigment containing 70-97% by weight calcium carbonate as required by claim 1.

Appellants argue that the Examiner has not met his burden in establishing a prima facie case of obviousness because he has not pointed to any disclosure within Hoshino which indicates a realization of the problem faced by Appellants or which would motivate one skilled in the art to form Appellants' composition (Brief, p. 6). This argument is not persuasive for several reasons. First, the prior art need not address Appellants' problem. *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901-1902 (Fed. Cir. 1990)(*en banc*), *cert. denied*, 500 U.S. 904 (1991). Second, Hoshino recognizes both gloss and brightness (whiteness), the properties focused on by Appellants, as important properties to be optimized (Hoshino, ¶ 0008). Third, Hoshino describes dispersions having the bimodal particle composition claimed, describes calcium carbonate as one of the inorganic pigments which can be combined with the emulsion particles and suggests amounts within and/or overlapping those of the claim. Under these circumstances, a case of prima facie obviousness is properly established. Where the difference between the claimed invention and the prior art is some range or other variable within the claims, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990).

We conclude that the Examiner has established a prima facie case of obviousness with respect to the subject matter of claims 1 and 3 which has not been sufficiently rebutted by Appellants. To the extent that Appellants are relying upon a showing of unexpected results to overcome the prima facie case of obviousness, we note that sufficiently probative objective evidence has not been relied upon in this appeal. Attorney arguments in the brief cannot take the place of evidence. *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972).

CONCLUSION

To summarize, the decision of the Examiner to reject claims 1 and 3 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) is affirmed on the basis of obviousness under § 103(a).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

CHUNG K. PAK Administrative Patent Judge	)
CHARLES F. WARREN Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)

CT/jrg

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